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Preliminary Amendment
Based on PCT/JP2003/000266

AMENDMENTS TO THE SPECIFICATION

On page 2, please replace the third paragraph starting at line 18 with the following amended one:

In terms of the interior permanent magnet motor, the permanent magnets are embedded in the ~~stator~~ rotor iron core, so that the pressing members for fixing the permanent magnets are unnecessary.

On page 10, please replace the first paragraph starting at line 2 with the following amended one:

To begin with, the relationship between the sheath thickness ***tc*** of the rotor magnetic-pole portions 24 and the magnet thickness ***tm*** of the permanent magnets 31, and the torque linearity will be described according to Fig. 5. ~~Fig. 4~~Fig. 5 is a characteristic diagram in which the relationship between the magnet thickness ratio ***tc/tm*** and the torque linearity is analyzed.

On page 10, please replace the second paragraph starting at line 8 with the following amended one:

It is understandable that, as illustrated in ~~Fig. 4~~Fig. 5, in order to enhance the torque linearity, the magnet thickness ratio ***tc/tm*** must be lowered. When the magnet thickness ratio ***tc/tm*** is lowered, the sheath thickness ***tc*** of the rotor magnetic-pole portions 24 gets relatively small compared to the magnet thickness ***tm***, so that the magnetic flux of the rotor magnetic-pole portions 24 in the rotor 20 comes close to saturation. Consequently, the magnetic flux leakage flowing from the rotor 20 to the stator 10 decreases, so that the torque linearity can be enhanced.

On page 10, please replace the third paragraph starting at line 18 with the following amended one:

~~Next, the relationship between the rotor maximum diameter *Dr* and the rotor arc radius *Rp*, and the cogging torque will be described according to Fig. 6.~~ Fig. 6 is a characteristic diagram in which the relationship between the magnet thickness ratio ***tc/tm*** and cogging torque is analyzed, where the sheath thickness of the rotor magnetic pole portions is ***tc***, and the magnet thickness of the permanent magnets is ***tm***.

Please replace the paragraph bridging pages 11 and 12 with the following amended one:

If the permanent magnet motor 1 is manufactured so that the magnet thickness ratio ***tc/tm*** equals 0.158, dimensional deviations arise in the magnet thickness ~~***tc***~~***tm*** and the sheath thickness ~~***tm***~~***tc***. If the dimensional deviations are assumed to be 5 %, the minimum value of ***tc/tm*** is $0.158 \times 0.95/1.05 = 0.143$.

Please replace the paragraph bridging pages 12 and 13 with the following amended one:

When the rotor diameter ratio ***Rp/Dr*** exceeds 0.29, as the rotor arc radius ***Rp*** relatively increases with respect to the diameter ***Dr*** of the rotor 20, smoothness of magnetic flux variations in the sections between the permanent magnets, in which the polarity switches from the N (S) pole to the S (N) pole 31, is disturbed, more specifically, moves away from the ideal sinusoidal wave, so that the cogging torque increases. When the iron-core-rotor diameter ratio ***Rp/Dr*** is smaller than 0.29, as the rotor arc radius ***Rp*** relatively ~~increases~~decreases with respect to the rotor maximum diameter ***Dr***, the cogging torque increases.

On page 13, please replace the second full paragraph starting at line 9 with the following amended one:

The cogging torque relative value in the conventional interior magnet rotor would be ~~0.16~~3.267, where the rotor diameter ratio ***Rp/Dr*** is a constant value 0.272.

On page 14, please replace the second full paragraph starting at line 7 with the following amended one:

Moreover, because the motor is configured so that the number of poles of the rotor 20 is 2***n***, and the number of salient poles ~~12~~11t of the stator 10 is 3***n***, when the rotor 20 is skewed, the cogging torque in the permanent magnet motor 1 can be further reduced.

Please replace the paragraph bridging pages 14 and 15 with the following amended one:

However, as illustrated in Fig. 8, in the permanent magnet motor in which magnet slots ~~22~~21e are provided in the rotor 20, and the permanent magnets 31 are inserted into the magnet slots ~~22~~21e and fixed by adhesive agents or the like, if the maximum rotating velocity is raised, the stress concentrates in the corner portions at both ends of the magnet slots ~~22~~21e, whereby fixing the permanent magnets 31 can be adversely affected.

On page 15, please replace the first full paragraph starting at line 3 with the following amended one:

Therefore, in order to resolve the problem described above, it is conceivable that curved portions are provided in the approximately arcuate magnet slots ~~22~~21e for housing the permanent magnets, axially bored in the rotor 20 as illustrated in Fig. 8, so as to reduce stress concentration.

On page 15, please replace the second full paragraph starting at line 7 with the following amended one:

When the length of the magnet slots ~~22~~21e in the radial direction of the rotor 20 is the slot width ***th***, an approximately semi-circular surface is formed in the corner portions at both ends of each of the magnet slots ~~22~~21e, and the radius of the semi-circular surface is the slot end radius ***Rh***, the magnet slots are configured so that the slot width ***th*** equals 2.6 (mm), the slot end radius ***Rh*** equals 1.3 (mm), and the slot ratio ***Rh/th*** equals 0.5.

On page 15, please replace the third full paragraph starting at line 13 with the following amended one:

Next, a characteristic diagram illustrated in Fig. 9, in which the slot ratio, ***Rh/th***, and the stress relative values at the corner portions at both ends of each of the magnet slots ~~22~~21e are analyzed, will be described.

On page 15, please replace the fourth full paragraph starting at line 16 with the following amended one:

As can be seen from Fig. 9, where the slot ratio ***Rh/th*** equals 0.5, the stress relative value at the corner portions at both ends of the magnet slots ~~22~~21e is minimum, and, where $0.4 \leq Rh/th$, the stress relative values at the corner portions at both ends of the magnet slots ~~22~~21e are between 1.0 and 1.2, which does not cause any problem in practical use.

On page 15, please replace the last paragraph starting at line 21 with the following amended one:

As described above, given that the width is ***th*** and the slot end radius is ***Rh***, by setting ***Rh/th*** to be within a range $0.4 \leq Rh/th$, stress concentration in the corner portions at both ends of the magnet slots ~~22~~21e caused by a centrifugal force due to the rotation of the rotor 20 can be reduced.